

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested. Claims 2-3, 8-12, 14-15, 20-24, and 26-27 have been canceled. Claims 1, 4-7, 13, 16-19, and 25 have been amended. New claim 28 has been added. Claims 1, 4-7, 13, 16-19, 25, and 28 are currently pending in the application.

CLAIM REJECTION UNDER 35 U.S.C. §101

In the Office Action, the Examiner rejected claims 13-24 under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claims 14-15 and 20-24 have been canceled. With regard to claims 13 and 16-19, Applicant has amended these claims to replace all instances of "computer readable medium" with "computer readable storage medium". Applicant believes that these amendments address the Examiner's concerns. Hence, Applicant requests that this rejection be withdrawn.

CLAIM REJECTION UNDER 35 U.S.C. §112

In the Office Action, the Examiner rejected claim 9 under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 9 has been canceled; thus, Applicant requests that this rejection be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

In the Office Action, the Examiner rejected claims 1-2, 5-7, 12-14, 17-19, 24-25 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Berger et al. (U.S. Publication No. 2003/0014466 A1) in view of Stevens (Advanced Programming in the

UNIX Environment). The Examiner also rejected claims 3-4 and 15-16 under 35 U.S.C. §103(a) as being unpatentable over Berger in view of Stevens and further in view of Kamp (Jails: Confining the omnipotent root). Claims 2-3, 14-15, 24, and 27 have been canceled. Claims 1, 6, 13, 18, and 25 have been amended to claim the invention more distinctly.

Claim 1

Claim 1 has been amended, and as amended, now recites:

A method comprising:
in a global operating system environment controlled by a single operating system kernel instance, establishing a first non-global zone and a second non-global zone, wherein the first non-global zone has a unique first zone identifier and the second non-global zone has a unique second zone identifier;
receiving from a first process executing in association with the first non-global zone a request to create a first inter-process communications (IPC) object, wherein the first process provides a particular object identifier to be assigned to the first IPC object, and wherein the first process has the first zone identifier associated therewith;
creating a first IPC object, wherein the first zone identifier associated with the first process is associated with the particular object identifier to give rise to a first augmented identifier for the first IPC object;
receiving from a second process executing in association with the first non-global zone a request to access an IPC object having the particular object identifier assigned thereto, wherein the second process provides the particular object identifier, and wherein the second process has the first zone identifier associated therewith;
determining, based upon the particular object identifier provided by the second process and the first zone identifier associated with the second process, that the second process is requesting access to the first IPC object;
permitting the second process to access the first IPC object to communicate with the first process;
receiving from a third process executing in association with the second non-global zone a request to create a second IPC object, wherein the third process provides the same particular object identifier to be assigned to the second IPC object, and wherein the third process has the second zone identifier associated therewith;
creating a second IPC object, wherein the second zone identifier associated with the third process is associated with the particular object identifier to give rise to a second augmented identifier for the second IPC object;

receiving from a fourth process executing in association with the second non-global zone a request to access an IPC object having the particular object identifier assigned thereto, wherein the fourth process provides the particular object identifier, and wherein the fourth process has the second zone identifier associated therewith;

determining, based upon the particular object identifier provided by the fourth process and the second zone identifier associated with the fourth process, that the fourth process is requesting access to the second IPC object; and permitting the fourth process to access the second IPC object to communicate with the third process;

thereby enabling processes in the first non-global zone and the second non-global zone to use the same particular object identifier for inter-process communication without collision. (Emphasis added)

The amendments made to claim 1 are well supported by the Specification (see, for example, paragraphs 0047-0051 and Fig. 2B).

Claim 1, as amended, provides an advantageous method for enabling inter-process communication. According to claim 1, inter-process communication is achieved using IPC objects. With the method of claim 1, it is possible for processes in different non-global zones to use the same object identifier for the IPC objects without experiencing any collision.

The method of claim 1 achieves this by establishing a first non-global zone and a second non-global zone in a global operating system environment controlled by a single operating system kernel instance. The first non-global zone has a first zone identifier and the second non-global zone has a second zone identifier. The method then receives a request from a first process in the first non-global zone to create a first IPC object. As part of this request, the first process provides a particular object identifier for the first IPC object. Because the first process is in the first non-global zone, it has the first zone identifier associated therewith. Upon receiving this request, the method of claim 1 creates the first IPC object, and associates the first zone identifier with the particular object identifier to give rise to a first augmented identifier for the first IPC object. This

augmented identifier enables the first IPC object to be uniquely identified, and enables the first IPC object to be associated with the first non-global zone.

Thereafter, the method of claim 1 receives a request from a second process in the first non-global zone to access an IPC object having the particular object identifier assigned thereto. As part of this request, the second process provides the particular object identifier. Because the second process is also in the first non-global zone, it too has the first zone identifier associated therewith. Upon receiving this request, the method of claim 1 determines, based upon the particular object identifier provided by the second process and the first zone identifier associated with the second process, that the second process is requesting access to the first IPC object. Thus, the method of claim 1 permits the second process to access the first IPC object to communicate with the first process.

The method of claim 1 further receives a request from a third process in the second non-global zone to create a second IPC object. As part of this request, the third process provides a particular object identifier for the second IPC object. This particular object identifier is the same as that provided by the first and second processes; thus, the same particular object identifier is being used by the different processes in the different non-global zones. Because the third process is in the second non-global zone, it has the second zone identifier associated therewith. Upon receiving this request, the method of claim 1 creates the second IPC object, and associates the second zone identifier with the particular object identifier to give rise to a second augmented identifier for the second IPC object. This augmented identifier enables the second IPC object to be uniquely identified (despite the fact that it has the same particular object identifier as the first IPC object), and enables the second IPC object to be associated with the second non-global zone.

Thereafter, the method of claim 1 receives a request from a fourth process in the second non-global zone to access an IPC object having the particular object identifier assigned thereto. As part of this request, the fourth process provides the particular object identifier. Because the fourth process is also in the second non-global zone, it too has the second zone identifier associated therewith. Upon receiving this request, the method of claim 1 determines, based upon the particular object identifier provided by the fourth process and the second zone identifier associated with the fourth process, that the fourth process is requesting access to the second IPC object. Thus, the method of claim 1 permits the fourth process to access the second IPC object to communicate with the third process.

Notice that despite the fact that the processes in the different non-global zones are using the same particular object identifier for the IPC objects, the method is able to properly determine which IPC object should be accessed by which process. With this ability, the method of claim 1 makes it possible for processes in different non-global zones to use the same object identifiers for IPC objects without experiencing any collision.

Such a method is neither disclosed nor suggested by Berger and Stevens, taken individually or in combination. With regard to Berger, there is very little discussion about inter-process communication at all. As admitted by the Examiner in the Office Action, Berger does not explicitly teach: (1) receiving, from a first process executing in a non-global zone, a request to create a communications object; (2) creating a communications object; (3) receiving, from a second process, a request to initiate communication using the communications object; etc. Berger certainly does not disclose or suggest: (1) creating an IPC object, wherein the zone identifier associated with the

process that requested the creation of the IPC object is associated with a particular object identifier provided by the process to give rise to an augmented identifier for the IPC object; or (2) determining, based upon a particular object identifier provided by process and a zone identifier associated with the process, that the process is requesting access to a certain IPC object. Thus, Berger fails to disclose or suggest at least several significant aspects of claim 1.

The same is true for Stevens. Even though Stevens discusses IPC communication, there is nothing in Stevens that discloses or suggests: (1) creating an IPC object, wherein the zone identifier associated with the process that requested the creation of the IPC object is associated with a particular object identifier provided by the process to give rise to an augmented identifier for the IPC object; or (2) determining, based upon a particular object identifier provided by process and a zone identifier associated with the process, that the process is requesting access to a certain IPC object. Thus, both references fail to disclose or suggest at least these significant aspects of claim 1. Overall, there is nothing in Berger or Stevens that discloses or suggests a method that enables processes in different non-global zones to use the same object identifiers for IPC objects without experiencing any collision.

Because both references fail to disclose or suggest at least the above-discussed aspects of claim 1, even if the references were combined (assuming for the sake of argument that it would have been obvious to combine the references), the combination still would not produce the method of claim 1. For at least this reason, Applicant submits that claim 1, as amended, is patentable over Berger and Stevens, taken individually or in combination.

Although the Kamp reference was not applied to claim 1, it may be appropriate to address it at this time since in the rejection of claim 3, the Examiner contended that Kamp teaches the ability for communications objects in different non-global zones to use the same object identifier. Applicant respectfully submits that Kamp does not provide any such teaching. First of all, in Kamp, the identifiers that are discussed are user identifiers (UID's) and group identifiers (GID). They are not object identifiers. Second, Kamp discusses how "the uid associated with a process in one jail may be for a different user than in another jail". Thus, in Kamp, the potential collision is that a uid X may represent one user in one jail and represent another user in another jail. Notice that this type of collision is very different than that addressed by claim 1. The collision in Kamp has to do with the same uid meaning different things (i.e. representing different users) in different jails. In contrast, the collision that is avoided by claim 1 is the potential confusion caused by having different objects with the same identifiers (e.g. if two different objects have the same identifier, it is not known which one should be accessed). There is nothing in Kamp that discloses or suggests that different objects in different jails can use the same object identifier without experiencing collision. Thus, even if Kamp were further combined with Berger and Stevens (assuming for the sake of argument that it would have been obvious to combine the references), the method of claim 1 would still not be produced. Hence, Applicant submits that claim 1 is patentable over Berger, Stevens, and Kamp, taken individually or in combination.

Applicant further submits that claims 4-5 and 7, which depend from claim 1, and which recite further advantageous aspects of the invention, are likewise patentable over Berger, Stevens, and Kamp for at least the reasons given above in connection with claim 1.

Claim 13

Claim 13 is a computer readable storage medium counterpart of claim 1.

Applicant submits that claim 13 is patentable over Berger, Stevens, and Kamp for at least the reasons given above in connection with claim 1.

Applicant further submits that claims 16-17 and 19, which depend from claim 13, and which recite further advantageous aspects of the invention, are likewise patentable over Berger, Stevens, and Kamp for at least the reasons given above in connection with claim 13.

Claim 25

Claim 25 is an apparatus counterpart of claim 1. Applicant submits that claim 25 is patentable over Berger, Stevens, and Kamp for at least the reasons given above in connection with claim 1.

Claim 6

Claim 6 has been amended, and as amended, now recites:

A method comprising:
in a global operating system environment controlled by a single operating system kernel instance, establishing a first non-global zone and a second non-global zone;
receiving a request from a requestor process in the first non-global zone to communicate with a recipient process in the second non-global zone;
retrieving credentials for the requestor process;
verifying, based upon the credentials, that the requestor process is authorized to communicate with the recipient process across a non-global zone boundary; and
establishing a communication path between the requestor process and the recipient process if the requestor process is authorized to communicate with the recipient process, wherein the communication path is established

using a process that is resident in the global operating system environment. (Emphasis added)

The amendments made to claim 6 are well supported by the Specification (see, for example, paragraphs 0012, 0045, and Fig. 2A).

Claim 6 provides an advantageous method for enabling a requestor process in one non-global zone to communicate with a recipient process in another non-global zone. As shown by the above underlining, this is achieved by establishing a communication path between the requestor process and the recipient process, wherein the communication path is established using a process that is resident in the global operating system environment.

Such a method is neither disclosed nor suggested by Berger and Stevens, taken individually or in combination. As argued above, Berger discloses very little about inter-process communication. Berger certainly does not disclose or suggest establishing a communication path between a requestor process in one non-global zone and a recipient process in another non-global zone, wherein the communication path is established using a process that is resident in the global operating system environment.

The same is true for Stevens. Even though Stevens discusses IPC communication, there is nothing in Stevens that discloses or suggests establishing a communication path between a requestor process in one non-global zone and a recipient process in another non-global zone, wherein the communication path is established using a process that is resident in the global operating system environment. Thus, both references fail to disclose or suggest at least this significant aspect of claim 6.

That being the case, even if the references were combined (assuming for the sake of argument that it would have been obvious to combine the references), the combination still would not produce the method of claim 6. For at least this reason, Applicant submits

that claim 6, as amended, is patentable over Berger and Stevens, taken individually or in combination.

Claim 18

Claim 18 is a computer readable storage medium counterpart of claim 6. Applicant submits that claim 18 is patentable over Berger and Stevens for at least the reasons given above in connection with claim 6.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

In the Office Action, the Examiner rejected claims 8-11, 20-23, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Berger et al. in view of Stevens and further in view of Kamp and Presotto et al. (Interprocess Communication in the Ninth Edition Unix System). Claims 8-11, 20-23, and 26 have been canceled; hence, Applicant requests that this rejection be withdrawn.

NEW CLAIM

New claim 28 is an apparatus counterpart of claim 6. Applicant submits that claim 28 is patentable over Berger and Stevens for at least the reasons given above in connection with claim 6.

CONCLUSION

For the foregoing reasons, Applicant submits that all of the pending claims are patentable over the art of record, including the art cited but not applied. Accordingly, allowance of all pending claims is hereby respectfully solicited.

The Examiner is invited to telephone the undersigned at (408) 414-1080 to discuss any issues that may advance prosecution.

No fee is believed to be due specifically in connection with this Reply. To the extent necessary, Applicant petitions for an extension of time under 37 C.F.R. § 1.136. The Commissioner is authorized to charge any fee that may be due in connection with this Reply to our Deposit Account No. 50-1302.

Respectfully submitted,

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Pursuant to 37 C.F.R. 1.8(a)(1)(ii), I hereby certify that this correspondence is being transmitted to the United States Patent & Trademark Office via the Office electronic filing system in accordance with 37 C.F.R. §§1.6(1)(4) and 1.8(a)(1)(i)(C) on the date indicated below and before 9:00 PM PST.

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by /BobbyKTruong#37499/